

We claim:

1. A sputtering target of high purity cobalt comprising not more than about 500 ppm oxygen, a Ni content not more than about 200 ppm, an Fe, Al and Cr content not more than about 50 ppm, each, a Na content not more than about 0.5 ppm, a K content not more than about 0.5 ppm and having a magnetic permeability ratio greater than about 10.
2. A sputtering target of high purity cobalt comprising not more than about 50 ppm oxygen, a Ni content not more than about 200 ppm, an Fe and Al content not more than about 20 ppm each, a Cr content not more than about 1 ppm, a Na content not more than about 0.5 ppm, a K content not more than about 0.05 ppm and having a magnetic permeability ratio greater than about 10.
3. A sputtering target as recited in claim 1 or 2, wherein the X-ray diffraction peak intensity ratio, $I_{fcc}(200)/I_{hcp}(10\bar{1}1)$, of said cobalt is less than about 0.5.
4. A sputtering target as recited in claim 1 or 2, wherein the X-ray diffraction peak intensity ratio, $I_{fcc}(200)/I_{hcp}(10\bar{1}1)$, of said cobalt is 0.
5. A method of manufacturing a sputtering target of composition recited in claim 1 or claim 2, comprising the steps of :
 - a) preparing a high purity cobalt ingot;
 - b) subjecting said high purity cobalt to hot plastic working;
 - c) subjecting the hot worked cobalt to a cold plastic working with a thickness reduction of no less than about 5% at a temperature lower than the *hcp* transformation temperature.
6. A method of manufacturing a sputtering target as recited in claim 5, wherein said high purity cobalt preparation step (a) is carried out by a vacuum casting method or by e-beam melting.
7. A method of manufacturing a sputtering target according to claim 5, wherein said hot plastic

working takes place in the temperature range of about 750 - 900°C and said cold plastic working takes place in the temperature range of about 300 - 422°C.

8. A method of manufacturing a sputtering target of composition recited in claim 1 or claim 2, comprising the steps of :

- a) preparing a high purity cobalt ingot;
- b) subjecting said cobalt ingot to a cold plastic working with a thickness reduction of no less than about 5% at a temperature lower than the *hcp* transformation temperature.

9. A method of manufacturing a sputtering target according to claim 5 or claim 8, wherein said target is subjected to intermediate annealing below the *hcp* transformation temperature between cold working treatments.

10. A sputtering target as recited in claim 1 or claim 2, having an X-ray diffraction peak intensity ratio, $I_{fcc}(200)/I_{hcp}(10\bar{1}1)$, of less than about 0.5 and where most of the hexagonal prism axis $\langle 0001 \rangle$ is tilted between about 0 - 20° from the target normal.

11. A sputtering target as recited in claim 1 or claim 2, having an X-ray diffraction peak intensity ratio, $I_{fcc}(200)/I_{hcp}(10\bar{1}1)$, of less than about 0.5 and where most of the hexagonal prism axis $\langle 0001 \rangle$ is tilted between about 20 - 45° from the target normal.

12. A sputtering target as recited in claim 1 or claim 2, having an X-ray diffraction peak intensity ratio, $I_{fcc}(200)/I_{hcp}(10\bar{1}1)$, of 0 and where most of the hexagonal prism axis $\langle 0001 \rangle$ is tilted between about 0 - 20° from the target normal.

13. A sputtering target as recited in claim 1 or claim 2, having an X-ray diffraction peak intensity ratio, $I_{fcc}(200)/I_{hcp}(10\bar{1}1)$, of 0 and where most of the hexagonal prism axis $\langle 0001 \rangle$ is tilted between about 20 - 45° from to the target normal.